

Case study

Denver Federal Center

Denver, Colorado



Handling savings one step at a time

Sharp increases in natural gas prices and rising electricity costs throughout the country, mean federal energy users are examining ways to reduce energy consumption without spending scarce agency funds. This is the case at the Denver Federal Center, a 640-acre GSA complex with more than 90 buildings totaling 4.2 million square feet. Through a partnership with Johnson Controls, Inc. the Denver Federal Center is reducing energy and operating costs by more than \$450,000 per year.

"We're home to many federal agencies in the Denver area, such as the U.S. Bureau of Reclamation and the U.S. Geological Survey. We wanted to make sure our tenants were satisfied and working in a productive atmosphere – and that we were saving energy and money," says Scott Conner, Business Center Manager at the Denver Federal Center.

Conner says the Denver Federal Center also needed to upgrade and replace aging equipment, increase operational efficiency, improve water efficiencies, reduce emissions, and employ renewable energy to demonstrate its practicality. Most of all, they wanted to manage utility costs in order to make good business decisions. After listening to these concerns, Johnson Controls suggested a comprehensive approach using the Department of Energy's Super Energy Savings Performance Contract (ESPC). To make the project more manageable and successful, Denver Federal Center management and Johnson Controls worked together to develop a two-phase ESPC project.



Recommissioned solar panels indicate the Denver Federal Center's investment in the future.

"This comprehensive project insures that Federal agencies, and taxpayers, will benefit through wise energy management and increased efficiency. Our building tenants also have a brighter, more comfortable place to work."

SCOTT CONNER
BUSINESS CENTER MANAGER
PROGRAM MANAGER
DENVER FEDERAL CENTER



Scott Conner, Business Center Manager, Denver Federal Center, shown here at the newly renovated on-site childcare center.

Innovative strategies include renewable energy

The project consisted of traditional building improvements, such as lighting retrofits, upgrading the heating, ventilation and air conditioning equipment, and installing new, high-efficiency chillers and pumps, resulting in a total energy reduction of 34 billion BTUs. Johnson Controls recommissioned an existing solar domestic hot water heating system and improved an irrigation control system. These improvements included sensors, which are installed in the ground to indicate when it is time to water the landscaping, instead of relying on a time clock system. The water savings for the project will total nearly 11 million gallons per year.

In addition, a system was installed to automate electric and gas meter readings in all major facilities. As a result of both phases of the project, the Denver Federal Center is expected to reduce emissions by more than 16 million pounds of carbon dioxide, 40,500 pounds of nitrogen oxides, and 93,600 pounds of sulfur dioxide.

Metering provides effective management

The success of these projects in the first phase allowed the participants to forge a unique partnership. By featuring close coordination, regular communication and feedback throughout the process, developing Phase Two went smoothly. In the past, the Center had employees taking manual readings from numerous electric and gas meters located

throughout the campus. In the ESPC project's second phase, these readings have been automated using electronic data recording equipment that was installed on 70 different electric and gas meters. These electronic data devices can now be dialed up by a single computer to download the meter readings electronically. Once the information is captured electronically, it can then be managed using computer software to provide energy consumption reports. The automated metering provides one-point access to energy profiles at each building, which help identify future energy savings. With the instantaneous reports, facility managers can put data in manageable fashion and make better utility purchasing decisions.

"The data will help make us accountable for the efficient operation of the energy using equipment within these buildings. We plan to use this information to make sound business decisions," says Conner.

In retrofitting the on-site childcare center, a decision was made to use solar panels, which is an indication of the Denver Federal Center's investment in the future. "We knew that solar might not offer the best payback, but it's a good technology to embrace, and demonstrate to the children in this building, the power of renewable resources," says Conner.

Through both phases Johnson Controls was able to fulfill the Denver Federal Center's "wish list" – new equipment, renewable energy, water savings, utility management – all with \$450,000 in guaranteed annual energy savings and a 10-year simple payback. The Denver Federal Center was recognized in 2001 with a GSA Environmental Award for reducing air pollution emissions and water conservation.